

## REMARKS

Applicants respectfully request reconsideration of this application as amended. Claims 1-25 are pending in the application. Claims 1, 9- 11, 13, 16-22 and 25 have been amended.

The Examiner objected to the title as being too verbose. Applicants have replaced the title with another title. Applicants respectfully submit that the new title overcomes the Examiner's objection and respectfully request the Examiner to withdraw the objection.

The Examiner objected to the drawings as not showing all the claimed features. Specifically, the Examiner indicated that the claimed "excitation function" is not shown in the figures. Applicants respectfully disagree. Applicants point to Figure 2A where the excitation function is shown as an output of block 36 which finds the optimum excitation function from a code book and sends the excitation function to block 39, which reoptimizes the roots using the synthesis error optimization. Applicants respectfully submit that the reference to the output being excitation function satisfies the obligation to show the excitation function in the figures. Applicants respectfully request the Examiner to withdraw the objection to the drawings.

The Examiner objected to the specification due to informalities. Applicants have amended the specification to remove the problems cited by the Examiner. Applicants respectfully request to withdraw the objection.

The Examiner rejected claims 2 and 15 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner references the specification at page 13 indicating that a standard root finding algorithm is utilized and concludes that the subject matter of claims 2 and 15 is from another and it is not the Applicant's invention. Applicants respectfully agree with the Examiner that the standard root finding algorithm is not novel. Applicants respectfully sets forth that a standard root finding algorithm

may be used to find the roots of a polynomial. However, upon reading claims 2 and 15, the claims set forth an iterative root optimization algorithm, not solely as standard root finding algorithm. The root optimization algorithm may include a standard root finding algorithm; however, what is being claimed in claims 2 and 15 is not a standard root finding algorithm.

The Examiner rejected claims 9-11, 13-15, 18 and 20-25 under 35 U.S.C. § 112, second paragraph. Specifically the Examiner sets forth that the claimed equations were unclear because of the variables were not defined. Applicants respectfully submit that the mathematical equations set forth in the claims would be well understood by those who are skilled in the art. Even so, Applicants have amended the claims to define the variables that are set forth in the equations. Applicants respectfully submit that the amendments overcome the rejection. Applicants respectfully request withdraw of the objection.

The Examiner rejected claims 1-8, 12, 16, 17, and 19 under 35 U.S.C. § 102(b) as being anticipated by Kroon (U.S. 5,664,055). Applicants respectfully disagree. The present invention as claimed sets forth in claim 1 includes the following:

A method of digitally encoding speech, comprising  
generating an excitation function using an excitation module, said  
excitation function comprising a number of non-zero pulses within an analysis  
frame separated by spaces therebetween; and  
computing a synthesized speech using a synthesis filter in response to only  
said number of non-zero pulses within the analysis frame, including selecting one  
of a plurality of excitation functions and selecting roots of the synthesis  
polynomial for one excitation function that minimizes a synthesis error produced  
by the synthesis filter. (emphasis added)

As set forth above, claim 1 includes selecting an excitation function and roots of the synthesis polynomial of the excitation function that minimize the synthesis error produced by the synthesis filter creating synthesized speech. Such joint optimization is clearly not shown in Kroon. Kroon discloses a speech decoder that selectively generates the excitation signal based on signals from the decoder. However, there is no joint optimization of the model and the

excitation function. Moreover, Kroon does not disclose selecting roots of the synthesis polynomial as part of the processing with selecting the excitation function. In view of this, Applicants respectfully submit that the present invention as claimed is not anticipated by Kroon.


The Examiner rejected claims 9-11, 13-15, 18 and 20-25 under 35 U.S.C. § 103 as being unpatentable over Kroon (U.S. 5,664,055) in view of Chen. As set forth above, Kroon does not disclose selecting excitation function and roots of the synthesis polynomial for the excitation function to minimize the synthesis error produced by a synthesis filter. Chen does not overcome this deficiency. More specifically, Chen discloses an optimizer that operates in a coefficient domain, not the root domain. Operating in the root domain is much faster mathematically and more stable. Therefore, the combination of Kroon and Chen does not disclose each of the limitations in the claims. Thus, Applicants respectfully submit for the same reason as given above, the present invention as claimed in claims 9-11, 13-15, 18 and 20-25 are not obvious in view of Kroon and Chen.

If there are any additional charges, please charge Deposit Account No. 02-2666 for any fee deficiency that may be due.

Respectfully submitted,

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